

Biology
Chapter 4

Biology Project: Cell Model

Objective: To study the cell structures and their functions.

Introduction: In the last chapter, we have looked at cells, the basic units of life. Even though cells are the basic units, they are organized and made of smaller structures. Just as the body is made of organs, so the cell is made of organelles. Each organ or organelle has its own shape and function. We have studied the following structures/organelles:

1. cell membrane
2. cytoplasm
3. nucleus
4. nucleolus
5. centriole
6. mitochondria
7. endoplasmic reticulum (rough & smooth)
8. ribosome
8. Golgi Apparatus (body)
9. lysosome
10. microtubules
11. vacuoles
12. cilia

The cell can be compared to a factory. Like a factory, it makes products that need to be packaged and delivered to places inside or outside the cell. It needs energy to make its products, and blueprints to work from. **Our goal in this project will be to understand how these structures work together to help the cell do its work.**

Procedures:

1. **A physical model:** You will build a three-dimensional model of a cell (an animal cell). The structures of the cell should be clearly labeled.
2. **A key:** Each part of the cell is to be labeled and a key provided to indicate which material represents which organelle or cell part.

Materials: The following books and other materials will be available for your research:

1. **Your textbook** has short descriptions of each organelle; there are also several other textbooks available for you to use.
2. **The Web:** Start by doing a search. There are several good sites. If you can find pictures taken with an electron microscope, this will help you.
3. **Books** from the school library. They might help you in visualizing what the organelles look like.

Construction:

The cell will be constructed in class as a lab. You and your lab partner are to bring all of the materials for the construction with you to class on Thursday, October 9, 2008. The entire class period will be allowed for the construction. After the construction is complete, a quiz will be given on the parts of the cell and their functions.

Assessment: Your grade for this assignment will be based on:

1. How well your presentation clearly presents the structure and function of the cell.
2. A quiz covering all of the structures.
3. **This project will count as a test grade.**